Nationwide study sets benchmarks for 30-day mortality following chemotherapy for breast and lung cancer in England

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For the first time, national data on 30-day mortality for patients with breast and lung cancer treated with chemotherapy have been collected and analysed in order to help clinical teams review and improve patient care, and identify groups of patients who may have additional needs.

The study, published in *The Lancet Oncology* is the first time this type of data has been collected at a national level in any country. It identifies factors such as age and general well-being that affect 30-day mortality, as well as NHS trusts with higher than expected rates of mortality.

The study includes all breast and lung cancer patients who received one or more cycles of systemic anti-cancer therapy (SACT) in NHS trusts in England in 2014 - a total of 28364 women with breast cancer and 15045 men and women with lung cancer. Data were gathered from Public Health England's SACT dataset.

In this study, 30-day mortality was 8.47% for patients with lung cancer (1274/15045) and 2.47% for patients with breast cancer (700/28364). 30-day mortality was higher for patients receiving palliative treatment (10% for lung cancer 1061/10587; 7.48% for breast cancer 569/7602), compared to patients receiving curative treatment (2.88% for lung cancer 70/2429; 0.26% for breast cancer 41/15626) (table 2).

The use of SACT has increased substantially in the past 30 years.

Whereas it was previously only used to treat a small number of cancer types, it is now used routinely in many patients with common cancers. SACT can be given with the aim of improving long-term survival, either alone or in combination with surgery or radiotherapy, or for palliative purposes, to improve the quality of life for patients with advanced incurable cancers for as long as possible by controlling cancer growth and providing symptom relief.

Patients dying within 30 days after beginning systemic treatment are unlikely to have gained the survival or palliative benefits of the treatment, and because of the associated side-effects (eg, the risk of neutropenic sepsis) may be more likely to have suffered harm. It may therefore be a useful indicator of avoidable harm, but so far data on how it is used have been limited.

The study also examined a number of risk factors for 30-day mortality for all patients that could be included in those analyses - 23228 women with breast cancer and 9634 men and women with non-small cell lung cancer.

30-day mortality was higher for patients receiving their first reported SACT treatment - whether curative or palliative - compared to those who had already received one or more cycles of SACT (tables 4-7). 30-day mortality increased with age for both patients with breast or lung cancer treated with curative intent, and decreased with age for patients receiving palliative SACT. The authors say this may be because older patients may favour other forms of palliative care over SACTs, or because younger patients might have more aggressive forms of cancer.

30-day mortality was also generally higher for patients with worse general health, compared to those in better health. For example, 3% (13/480) of patients with non-small cell lung cancer (NSCLC) treated with curative intent who had a performance status (PS) of 0 died within

30-days; compared to 5% (4/88) with a PS 2-4 (table 6). The authors say this is possibly because patients in poorer general health may be less able to tolerate the negative side-effects of SACT, suggesting that care is required when advising chemotherapy in this patient group.

"Simply reducing doses of or avoiding SACT altogether would reduce or eliminate instances of treatment-related early mortality, but at the cost of some patients being denied effective SACT and hence the survival and palliation benefits. In order to maximise the benefits of systemic treatment, it is important to gain a detailed understanding of how many different factors affecting patients are linked to the increased risk of early mortality." says co-author Professor David Dodwell, Institute of Oncology, St James Hospital, Leeds, UK. "Patient choice is an important factor in decisions about treatment and the factors we have identified may provide a focus of discussions about treatment between patients and their clinicians to allow better informed decisions."

Additionally, several trusts were found to have higher rates of 30-day mortality after SACT than expected, including seven for curative breast cancer, four for palliative breast cancer, five for curative NSCLC and seven for palliative NSCLC (figures 2-5). The authors say there may be a number of reasons why trusts are identified as outliers including poor data management, poor clinical care or decision making, and have written to all trusts to inform them on their 30-day mortality status, encouraging them to review their practices.

"This important study uses real clinical data, rather than trial data, from patients across the NHS to examine the quality of care and clinical decision making. Public Health England's National Cancer Registration and Analysis Service will work with all trusts to help them understand the findings and the implications for their data collection and care," says Dr Jem Rashbass, co-author and Cancer Lead at Public Health England, UK.

The authors note that although they identified several factors affecting 30-day mortality risk, the dataset only included patients who received SACT, so no information is available about whether patients would have had better outcomes without SACT.

Writing in a linked Comment, Professor David Cameron, Edinburgh Cancer Centre, Western General Hospital, Edinburgh, Scotland, says: "This is a very welcome report, and gives for the first time a national picture of factors that affect the likelihood of death, and complements the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report's focus on the process of care." He adds that "despite this initiative to collate national data for cancer chemotherapy, there were significant gaps and deficiencies in the national dataset. To someone who has worked in the UK National Health Service their whole clinical life, it remains a tragedy that we still cannot get complete national (anonymised) datasets to inform clinicians and patients and to drive real improvements in patient care. This study, despite its limitations, sets a standard for what health-care systems should achieve: to routinely record, collate, and report at a national level the negative consequences of medical interventions to improve the quality of health care."

More information: *The Lancet Oncology*, www.thelancet.com/journals/lan … (16)30383-7/abstract

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